to keep a record of the number of cairns replaced as well as repaired and the length of the lines cleared by these people in return for the privileges they enjoy. But it would be no exaggeration to say that this *modus operandi* saves the Department an expenditure of Rs. 10,000 at least annually, because it has to be remembered that in the Riverain Reserves, which are as a rule flooded for a period varying from three to four months, the work has to be renewed year after year.

### *IV.—Surveys.*

Surveys.

32. Topographical sheets of the Indus Riverain Survey undertaken by a Survey party of the Government of India as soon as published are supplied to Divisional Forest Officers with a view to keeping a correct record of the changes brought about in the frontages of the riparian forest tracts by the Indus Now that a Surveyor is attached to each Forest division, maps will be kept corrected up to date, and such a reliable record of changes will be of great value in proving the claims of the Department to new formations thrown up against forest boundaries when any disputes arise. But what is of more importance is that, with an accurate basis such as these maps will afford, it will be possible to prepare working schemes on sound sylvicultural principles.

Work of the permanent Surveyor.

33. The permanent Surveyor attached to the Circle has performed a creditable amount of work during the year. Besides making a large number of copies of the Forest maps required for the use of Divisional and Range Forest Officers, he has surveyed about 33,000 acres of forest land, and at the close of the year was engaged in laying out coupes to be exploited in 1895-96 in the Jerruck Division.

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## CHAPTER II.

### Management of State Forests.

### *I.—Regulation of Management.*

#### *(a) Working Plans and their Control.*

Possibility of a regular working plan.

34. The forests continued to be worked according to the rough scheme introduced three years ago, under which one-twelfth part of each forest blocked nominally was set apart for the chief purpose of supplying firewood to the North-Western Railway and other consumers. The disadvantages of such a treatment are self-apparent and need not be discussed here, as I shall have occasion later on in this report to speak of them. Suffice it to say that proposals are being formulated with a view to the preparation of regular working plans according to the provisions of the Forest Department Code, 4th Edition.

35. A great deal has been said in previous reports regarding the peculiar conditions prevailing in the Sind Forests, one of which, and the chief one, is that the area of the most important forests is liable to serious fluctuations. But I am not prepared to recognize this difficulty as unsurmountable, and in my opinion it ought not to bar the way to a rational method of treatment being introduced. It goes without saying that it will entail additional labour in carrying out the provisions of the plan, but that cannot be considered a sufficient reason for delaying the application of sound sylvicultural principles to the forests so situated.

The work of cutting up forests into compartments.

36. The work of cutting up the forests into compartments has hardly made any progress, as during the year under report measurers possessing even an elementary knowledge of surveying could not be obtained owing to their being able to earn better wages on large public works which were under construction, such as the Jamrao Canal and the Kotri-Rohri Railway, than the Forest Department could offer.

37. The year's work as well as that remaining to be done is given in the following statement :—

| Division. | Area cut up into compartments up to 30th June 1894. | | Area cut up during 1894-95. | | Total area cut up into compartments. | | Area still remaining to be cut up. | Remarks. |
|---|---|---|---|---|---|---|---|---|
| | Acres. | Length in miles of rides of 20 ft. wide. | Acres. | Length in miles of rides of 20 ft. wide. | Acres. | Length in miles of rides of 20 ft. wide. | Acres. | |
| Sukkur ... ... | *202,880 | 1,273 | ... | ... | 202,880 | 1,273 | 89,301 | *These figures include the areas which were cut up into compartment and which have been subsequently disforested. |
| Naushahro ... ... | *85,964 | 536 | 3,840 | 24 | 89,804 | 560 | 68,173 | |
| Hyderabad ... ... | 98,607 | 511 | ... | ... | 98,607 | 511 | 27,228 | |
| Jerruck ... ... | 95,878 | 548 | ... | ... | 95,878 | 548 | 11,221 | |
| Total ... | 483,329 | 2,868 | 3,840 | 24 | 487,169 | 2,892 | 195,928 | |

*(b) Annual Plans of Operations.*

38. These were submitted for all divisions, but the Divisional Forest Officers were not able to carry the timber and firewood operations out in their entirety owing to the congested state of the labour market throughout the Province during the year under report.

Annual plan of operations.

## *II.—Working of the year.*

*(a) Communications and buildings.*

39. The Province of Sind being as a rule fairly provided by Local Fund roads, there is seldom any necessity for the Forest Department to undertake any expensive road project. A good many of the most important forests having been cut up in squares of half-mile sides, the transport of produce from the forests by land or water is greatly facilitated by means of the dividing lines or rides. These, moreover, are made use of by the people at large during the dry season to carry grain and other produce of the country to wharves on the banks of the river.

No necessity for undertaking expensive Forest roads.

40. The building works undertaken by the Forest Department consist in the erection of cheap offices for Range Forest Officers and Forest Guards' houses in the usual style of village huts.

Buildings.

41. Under the head of communications and buildings, Rs. 1,730 were spent during the year as detailed below :—

| Division. | Amount. | Remarks. |
|---|---|---|
| | Rs. | |
| Sukkur ... ... ... | 479 | |
| Naushahro ... ... ... | 361 | |
| Hyderabad ... ... ... | 720 | |
| Jerruck ... ... ... | 170 | |
| Total ... | 1,730 | |

42. No works were carried out through the agency of the Public Works Department.

*(b) Protection of Forests from injury.*

*(1) General Protection and Breaches of Forest Law.*

Inadequacy of the Protective Staff.

43. The Forest Protective Staff during the year received no addition to its strength, although the want of a larger establishment is greatly felt. The pay offered on first appointment as well as future prospects, both in the upper and lower grades, are by no means good and therefore it is not surprising that the general character of the subordinate establishment is far from being satisfactory. In other Departments of Government, a better scale of pay is readily sanctioned, and it is to be regretted that the representations of the Forest Department for improving the tone of the subordinate service have not been viewed with similar indulgence.

44. The executive branch is being now recruited from the Forest class in the College of Science, Poona, but these trained officers, I am sorry to say, are following in the footsteps of the unscrupulous and ignorant men whom they are succeeding owing to their slender means. It is also found difficult to obtain recruits to fill vacancies in the ministerial staff as the pay is not considered sufficient for their maintenance in these days, when a common coolie can easily earn Rs. 10 to Rs. 15 per mensem.

45. Under such circumstances, the work of the Protective Staff leaves much to be desired, but it must be said that plundering of the forests on an extensive scale is certainly a thing of the past. A very large number of petty thefts, however, continue to be committed, which are confined mostly to material required for personal use or the use of some influential zemindar or land-holder living in the vicinity of the forests, whose servant or follower the thief is.

Cases tried by Magistrates.

46. The number of new cases taken into Court in the two years under comparison were 48 and 34, respectively, and the decrease is attributed to the fact that only serious cases were sent for trial, the more trivial ones being either compounded under Section 67 of the Indian Forest Act or, when the assessed value of damage was considered insignificant or it was a first offence, the offenders were not proceeded against but let off with a warning.

Cases compounded under Section 67 of the Indian Forest Act.

47. It appears that in Form No. 52 of the year 1893-94 cases of illicit grazing compromised by two of the Divisional Forest Officers (Hyderabad and Naushahro) were not included. The proceedings in such cases are regulated by the rules framed by the Commissioner in Sind, but the penalty enforced thereunder is under the authority of Section 67 of the Indian Forest Act, and therefore I have included them in Form No. 52 for 1894-95. Exclusive of illicit grazing cases, it will be seen that the number disposed of in this manner by Divisional Forest Officers is almost the same as last year, the figures being 172 and 171 for the two years.

Details by Divisions of prosecuted cases.

48. A comparative statement of the number of cases tried before Magistrates for breaches of the Forest Law during the year under report and the year preceding, with the result of the trials, is given below :—

| Division. | 1893-94. | | 1894-95. | | Percentage of failure. | |
|---|---|---|---|---|---|---|
| | Prosecuted. | Acquitted. | Prosecuted. | Acquitted. | 1893-94. | 1894-95. |
| Sukkur ... ... ... | 14 | 9 | 8 | 3 | 64 | 37 |
| Naushahro ... ... ... | 10 | 1 | 24 | 16 | 10 | 67 |
| Hyderabad ... ... ... | 13 | 2 | 10 | 1 | 15 | 10 |
| Jerruck ... ... ... | 2 | 2 | 4 | 1 | 100 | 25 |
| Total ... | 39 | 14 | 46 | 21 | 36 | 46 |

49. In addition to the 34 new cases taken into Court, there were 19 cases brought over from the preceding year. Of the total number, 46 were disposed of by the 30th June 1895, with the result that there were 25 convictions and 21 acquittals. The percentage of failures it is to be regretted is higher than in 1893-94, and is shown against the Naushahro Division. No explanation is traceable in the Divisional report, but I attribute it to the fact that prosecution witnesses as a rule will not adhere to the statements incriminating the accused, but retract directly they are examined before Magistrates.

50. In all the other divisions, there is a decrease in the number of prosecutions and the percentage of acquittals has also fallen, which show that prosecutions have been undertaken with care and judgment.

Details of cases compounded under Section 67 of the Forest Act.

51. The classification of the compounded cases is given in the following statement for the two years under comparison :—

| Division. | Illicit grazing. | | Theft. | | Other offences. | | Total. | |
|---|---|---|---|---|---|---|---|---|
| | 1893-94. | 1894-95. | 1893-94. | 1894-95. | 1893-94. | 1894-95. | 1893-94. | 1894-95. |
| Sukkur ... ... | 606 | 741 | 23 | 52 | ... | ... | 629 | 793 |
| Naushahro ... ... | 110 | 66 | 60 | 31 | ... | ... | 170 | 97 |
| Hyderabad ... ... | 54 | 16 | 83 | 71 | ... | ... | 137 | 87 |
| Jerruck ... ... | 397 | 345 | 4 | 17 | 1 | 1 | 402 | 363 |
| Total ... | 1,167 | 1,168 | 170 | 171 | 1 | 1 | 1,338 | 1,340 |

52. Cattle breeders and other owners of cattle take out usually grazing permits for a less number of animals than they actually possess, and it is only when they are detected in grazing a larger number of animals than is covered by the permit that the penalty is levied. The number of such cases, therefore, must fluctuate as it depends on the amount of honesty and vigilance displayed by the subordinates. In the theft cases, the increase is in the Sukkur and Jerruck Divisions, in which during the previous year the offenders were let off with a mere caution, but as the forests began to show signs of serious damage more stringent measures had to be resorted to.

53. Exclusive of illicit grazing cases, the number compounded together with the sums of money accepted and received by Divisional Forest Officers by payment of money compensation under Section 67 of the Indian Forest Act compared with the figures of 1893-94 show as under :—

| Division. | 1893-94. | | 1894-95. | |
|---|---|---|---|---|
| | No. of cases. | Compensation. | No. of cases. | Compensation. |
| | | Rs. | | Rs. |
| Sukkur ... ... ... | 23 | 44 | 52 | 96 |
| Naushahro ... ... ... | 60 | 153 | 31 | 72 |
| Hyderabad ... ... ... | 83 | 323 | 71 | 240 |
| Jerruck ... ... ... | 5 | 8 | 18 | 51 |
| Total ... | 171 | 528 | 172 | 459 |

54. The 172 cases of compounded offences exclusive of those coming under illicit grazing are classified according to the amount of the fine paid in the following statement. The average compensation per case is about Rs. 2-11-0 whereas in the preceding year it was Rs. 3-2-0 :—

| Division. | No. of cases in which compensation was fixed at Rupees | | | | | | | | | | | | | Total. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 12 | 15 | 18 | |
| Sukkur ... ... ... ... | 33 | 8 | 4 | 1 | 3 | ... | ... | ... | ... | 2 | ... | 1 | ... | 52 |
| Naushahro ... ... ... ... | 19 | 5 | 1 | ... | 2 | ... | ... | 3 | ... | ... | ... | ... | 1 | 31 |
| Hyderabad ... ... ... ... | 6 | 28 | 7 | 13 | 11 | 3 | 1 | ... | ... | 1 | 1 | ... | ... | 71 |
| Jerruck ... ... ... ... | 7 | 4 | 1 | ... | 5 | ... | ... | ... | ... | 1 | ... | ... | ... | 18 |
| Total ... | 65 | 45 | 13 | 14 | 21 | 3 | 1 | 3 | ... | 4 | 1 | 1 | 1 | 172 |

55. The information given in the following statement is in accordance with paragraph 11 of Government Resolution No. 1899 of the 15th March 1891 :—

| Division. | No. of complaints disposed of under Section 67. | No. of cases in which compensation has been accepted. | No. of appeals against the proceedings. | Manner in which appeals have been disposed of. |
|---|---|---|---|---|
| Sukkur ... ... ... ... | 788 | 788 | ... | ... |
| Naushahro ... ... ... ... | 97 | 97 | ... | ... |
| Hyderabad ... ... ... ... | 87 | 87 | ... | ... |
| Jerruck ... ... ... ... | 363 | 363 | ... | ... |
| Total ... | 1,335 | 1,335 | ... | ... |

(2) *Protection from Fire.*

Forest fires.

56. The results of the year's fire protection as compared with those for the year 1893-94 are shown below :—

| Division. | No. of fires. | | Area burnt. | |
|---|---|---|---|---|
| | 1893-94. | 1894-95. | 1893-94. | 1894-95. |
| | | | Acres. | Acres. |
| Sukkur ... ... ... ... | 79 | 44 | 3,727 | 2,884 |
| Naushahro ... ... ... | 3 | 6 | 109 | 192 |
| Hyderabad ... ... ... | 9 | 3 | 516 | 136 |
| Jerruck ... ... ... ... | 16 | 7 | 3,457 | 332 |
| Total ... | 107 | 60 | 7,809 | 3,544 |

57. Although there is a decrease in the number of fires as well as in the area traversed by them, this apparent improvement in fire conservancy cannot be altogether ascribed to greater vigilance on the part of Forest subordinates or to any special fire protection measures. The river rose very early and the inundation was an exceptionally high one. Many of the forests received a copious supply of water, which was followed by a luxuriant growth of grass. Under such favourable circumstances, it is not to the interests of the cattle breeders, who are the principal incendiaries to set the forests a-light.

58. In Upper Sind, however, the forests are occasionally burnt to manufacture dead wood when the supply gets scarce in the forests in the vicinity of large towns such as Rohri, Sukkur, Shikarpur, Larkana, &c., but when the origin of the fires is traced to this source, the forests are closed to people engaged in this trade.

SUKKUR DIVISION.—Since the present Divisional Forest Officer, Mr. Dalal, has been in charge he has devoted his special attention to fire conservancy, with the result that all the fires reported during the year were speedily extinguished before they had time to get out of hand.

NAUSHAHRO DIVISION.—The fires were not destructive and were due to accident.

HYDERABAD DIVISION.—In the forests of this division the growing stock is gradually surmounting and killing the undergrowth of reeds and grass, and it is only in new formations in which the tree-growth has not established itself that there is any risk from fires.

JERRUCK DIVISION.—Although the favourable climatic conditions mentioned before are answerable somewhat for the improvement, the Divisional Forest Officer reports that this is due to greater vigilance on the part of Ranger Dalpatrai Jethanand, in whose range (Shahbandar) fires did so much damage in the previous year, and to the fact that double grazing fees were levied as a punishment in the tracts traversed by fire. In order to prevent the spread of fires from Revenue waste lands into the Huderani and Penah forests, in which disastrous fires used to occur every year, their boundary-line was fire-traced and a constant look out was kept, with the gratifying result that they escaped burning for the first time in their history.

*(3) Regulation of Grazing and Protection from Cattle.*

Grazing regulations.

59. Grazing is regulated under the rules sanctioned by the Commissioner in Sind in his No. 2237, dated 30th June 1886. The forests are divided into three classes according to their grazing capacities, and in each of which a different scale of fees is levied. The dues under these rules do not press heavily on the people at large, and they are paid by them without demur.

Area opened and closed to grazing.

60. The following statement shows the areas closed and open to grazing at the close of the year 1894-95 :—

| Division. | Open. | | Closed. | | Total area. | | Remarks. |
|---|---|---|---|---|---|---|---|
| | Square miles. | Acres. | Square miles. | Acres. | Square miles. | Acres. | |
| Sukkur ... ... | 380 | 469 | 23 | 489 | 404 | 318 | 1·160 square miles closed to browsers. |
| Naushahro ... ... | 230 | 59 | 9 | 323 | 239 | 382 | 2·200 do. do. |
| Hyderabad ... ... | 135 | 125 | 61 | 473 | 196 | 598 | 31·207 do. do. |
| Jerruck ... ... | 148 | 434 | 7 | 82 | 155 | 516 | |
| Total ... | 894 | 447 | 102 | 87 | 996 | 534 | |

61. It has been the custom to continue year after year to fence and close against grazing all the compartments exploited for locomotive fuel without taking any steps to open such of them in which reproduction was assured.

62. The subordinates naturally supposed the period of closure was for 12 years, the rotation fixed for exploiting both pure babul as well as mixed forests. At this rate, the whole of the productive area would be closed in time. The absolute closing of the forests in Sind is not at all necessary; the conditions for reproduction are exceptionally favourable, and the result of such a procedure, even if it was required to be introduced, would entail great hardship on the surrounding agricultural population. Directly, therefore, it was brought to my notice, first in the Sukkur division and subsequently in the others, that a large number of compartments could be safely opened, the following simple rules were framed for the guidance of Range Forest Officers :—

(1) In the compartments in which Kundee (*Prosopis Spicigera*) predominates and which come annually under the influence of the floods, oxen and buffaloes should be admitted in the fourth year.

(2) Compartments in which babul is the principal species should be thrown open to all cattle, except browsers, in the sixth year.

(3) As for browsers, each case should be decided on its merits, and the compartments should be thrown open to them for grazing only when the growth is sufficiently high and beyond their reach.

63. The number of animals impounded during 1893-94 and 1894-95 for trespassing in open and closed forests is compared in the following statement :—

Comparative statement of cattle sent to the pound.

| Division. | From open forests. | | From closed forests. | | Total. | |
|---|---|---|---|---|---|---|
| | 1893-94. | 1894-95. | 1893-94. | 1894-95. | 1893-94. | 1894-95. |
| Sukkur ... ... ... | 3,263 | 1,476 | 2,852 | 3,426 | 6,115 | 4,902 |
| Naushahro ... ... | 2,010 | 1,537 | 4,111 | 3,764 | 6,121 | 5,301 |
| Hyderabad ... ... | 1,449 | 1,703 | 4,687 | 5,981 | 6,136 | 7,684 |
| Jerruck ... ... ... | 820 | 1,354 | 2,479 | 3,747 | 3,299 | 5,101 |
| Total ... | 7,542 | 6,070 | 14,129 | 16,918 | 21,671 | 22,988 |

64. The impoundings have been heavier in the Hyderabad and Jerruck Divisions from open as well as closed forests. The reason for the increase is due to systematic evasion of payments of the prescribed fees in forests open to grazing and to the inducements being very great to disrespect closures for the sake of the luxuriant fodder available in them. The grazing fees are equitable enough, but it will take some time yet before the people will learn to adopt the safer plan of securing grazing for their animals by taking out permits instead of paying pound fees for a brief spell of stolen grazing. In the Sukkur and Naushahro Divisions, cattle owners whose animals were found to be in excess of the number entered in their permits, or who were evading the payment of dues altogether, took advantage of the option given them under the rules in force to pay the penalty and register their animals, and consequently a less number was impounded from open forests.

65. The fact must not be lost sight of that a much larger number than is impounded in any one year enter the closures. Even when they are caught, it is impossible for one or two guards to drive all of them to the pound and a good many escape. It has also to be admitted that lax supervision on the part of forest guards reduces the number also.

66. The following statement shows the number of cattle of different kinds impounded in the several divisions during the year from open as well as closed forests :—

| Division. | Kind of area. | Cows and Bullocks. | Buffaloes. | Camels. | Horses. | Asses. | Goats and Sheep. | Total from | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Closed area. | Open area. |
| Sukkur ... ... | Open ... | 608 | 295 | 331 | 11 | 4 | 227 | ... | 1,476 |
| | Closed ... | 1,333 | 961 | 153 | 19 | 85 | 875 | 3,426 | ... |
| Naushahro ... ... | Open ... | 330 | 116 | 232 | 11 | 8 | 840 | ... | 1,537 |
| | Closed ... | 1,819 | 714 | 441 | 46 | 30 | 714 | 3,764 | ... |
| Hyderabad ... ... | Open ... | 574 | 147 | 197 | 4 | 7 | 774 | ... | 1,703 |
| | Closed ... | 2,931 | 1,023 | 602 | 15 | 331 | 1,079 | 5,981 | ... |
| Jerruck ... ... | Open ... | 413 | 73 | 79 | ... | ... | 789 | ... | 1,354 |
| | Closed ... | 1,714 | 477 | 327 | 36 | 159 | 1,034 | 3,747 | ... |
| Total ... | Open ... | 1,925 | 631 | 839 | 26 | 19 | 2,630 | ... | 6,070 |
| | Closed ... | 7,797 | 3,175 | 1,523 | 116 | 605 | 3,702 | 16,918 | ... |

67. In order to keep out cattle from compartments under reproduction, undersized crown and side branches of the felled trees are utilized for fencing purposes. The erection of hedges marches simultaneously as a rule with the exploitation of the compartments, and is carried out with the help of the rural population in consideration of the concessions granted to them, such as free grants of produce, grant of low-lying lands for cultivation, &c.

### (c) *Improvement of Forest growth.*

#### (1) *Natural Reproduction.*

Natural reproduction.

68. The year under report was favourable to natural reproduction as a whole, whether from seed or stool, owing to a high flood and a fair seed year. In some forests, however, the lateral overflow stood at such a great depth against the embankments, leaving behind it a layer varying from 6 to 24 inches of fresh deposit, that all vegetation was entirely buried under it. If, year after year, the present embankment policy of the Public Works Department brings about a higher and higher flood, the character of the riverain forests will materially change and the babul bearing area may considerably diminish.

Details of natural reproduction according to divisions.

69. In the Sukkur Division, owing to an extensive breach in the Sukkur-Begari Bund, the Abad and Bagargi forests were well inundated after a lapse of some years. In the riverain forests, the high floods were by no means destructive as they did not only give an impetus to the existing growth but covered the blanks with self-sown seedlings, and the forest on the new formations which have been added of recent years is speedily getting ready for the axe also.

70. In the areas protected from grazing in the riverain forests of the Naushahro Division, babul seedlings are forcing their way through the dense growth of tamarisk and reeds. In the forests which are not flooded, the reproduction from seed is absolutely *nil*, but from coppice shoots is fairly vigorous. The life of a Kundee forest can be prolonged so long as it is rigidly kept closed against browsers; surface irrigation is not necessary, and the forests both in this as well as in the Sukkur Division, which were reported in previous years to have shown signs of decay or to have actually died out, succumbed to the ravages committed by goats, sheep and camels.

71. Natural reproduction almost everywhere is excellent in the Hyderabad Division. Forests which were beyond the reach of the inundation were flooded for the first time, and bare places which were an eye-sore are now filled with healthy babul seedlings. In Unurpur range, however, the silt deposit has retarded natural reproduction.

72. Where soil and situation are favourable, natural reproduction in the Jerruck Division is quite as good as in the Hyderabad Division, but Mr. Ryan, the Divisional Forest Officer, does not consider that the high floods of the last few years are such a great boon. I quote his own words, "the absence of all surface growth in the riverain babul forests owing to the repeated heavy overflows, is becoming a marked feature in them. All that can be seen in these areas are the old mature trees which were naturally established before the bund system was introduced, and these when cut down leave large blanks, for no young growth springs up to take their place." I take, however, a more hopeful view of the situation, as I think a low inundation may intervene, and if it does not, to reproduce such areas by systematic planting with the aid of the forest cultivator would present no difficulties whatever.

#### (2) *Artificial Reproduction.*

Description of cultural operations.

73. Cultural operations in this Circle are as a rule confined to scattering seed in felled compartments and other closures in order to assist natural reproduction. Regular plantations, properly so called, have not been undertaken. The Kot Sultan project, to create a Tali forest on the lines of the Changa Manga plantation in the Punjab referred to in paragraph 57 of the last year's administration report, has been shelved pending the construction of the new Shikarpur Canal.

Details of artificial reproduction by divisions.

74. In the Sukkur Division, directly after the river fell, 600 maunds of babul seed were broadcasted. The results have been on the whole successful. Innumerable seedlings are reported to have survived the frost, and there is every reason to believe they have established themselves.

135 maunds of babul seed were scattered in closures to fill up blanks in the Naushahro Division.

The conditions being so favourable in the Hyderabad Division that most of the felled compartments reproduce themselves naturally without any artificial aid. It was therefore necessary to broadcast about 94 maunds of babul seed in these forests only.

Hundreds of seedlings, sufficient to form a dense forest, resulted from the sowing of 295 maunds of babul seed in the forests of the Jerruck Division, and the conditions of the growth in the compartments similarly treated since 1892 is most satisfactory.

*(3) Early thinnings.*

Thinnings.

75. No thinning out was done during the year.

*(4) Other Operations for the improvement of the growing Stock.*

Improvement of the growing stock.

76. In past years, attention has not been paid to free the growing stock by cutting out destructive climbers, and it is contemplated to arrange to carry on this most important work on an extensive scale through the agency of the Protective Staff and of people who depend on the forests for their livelihood.

*(5) Experiments.*

Experiments.

77. An attempt was made to introduce new species in the Naushahro Division, but the soil and situation chosen for sowing the seed were so unfavourable that I am not surprised the experiment proved a complete failure.

78. Experimental sowings of the rain tree (*Iuga Sama*) were also made in the Jerruck Division with seed obtained from Dr. King, of the Calcutta Botanical Gardens, with a fair show of success. Mr. Ryan states in his report that "this tree possesses the property of extracting salt from the soil, and excellent results in this respect have been obtained by Mr. Maries by planting it in Bengal. In one locality which was planted with *Iugu Suma*, the site of an old saltpetre factory on which not even a weed would grow, in less than five years not a vestige of salt remained in the ground. There are extensive tracts of 'kalar' land in Sind which are now unproductive and which by planting with the *Iugu Sama* might be reclaimed."

*(d) Exploitation of Major Forest Produce.*

Exploitation of timber.

79. Timber was exploited on the selection method, and firewood fellings were conducted as heretofore by restricting them to specified compartments to be worked during the year. A statement showing the area set apart for supplying the demands of the North-Western Railway and other large consumers in firewood is given below:—

| Division. | Area of compartments. |
|---|---|
| — | Acres. |
| Sukkur ... ... | 12,478 |
| Naushahro ... ... | 3,750 |
| Hyderābād ... ... | 2,480 |
| Jerruck ... ... | 500 |

*(e) Extraction and transport of Major Forest Produce by Land and Water.*

Departmental system of extracting firewood.

80. The extraction and transport of firewood before 1892 was done by contractors, but in that year the system known locally as the "Departmental" system was introduced, which practically resulted in substituting executive officers in charge of ranges for contractors. The reasons given for the change were that, as middlemen, the contractors were appropriating legitimate profits which ought to accrue to the Department, and that they, as a rule, extracted only a portion of the exploitable material available in the compartments given them for felling and thereby only such forests as were near to the Railway stations or the river were being worked over their capacity while others yielded not the slightest return. The promoters of the new system had the best of motives, it is readily admitted, but unfortunately they forgot that, by making the Range Forest Officers change places with the contractors, they were being turned into or made to act as such. The extraction of the material was to be done within sanctioned rates, and if they failed to obtain labour, or if they incurred any excess expenditure, they were held personally responsible. It came to be recognized, therefore, that the smartest officer and the one most deserving of promotion was the one who could supply a large quantity of fuel to the Railway and other public bodies; it did not matter whether his compartments were evenly felled over or, what is more to the point whether he was getting the work done under the sanctioned rates or not and appropriating the balance.

81. In the absence of reliable maps valuation surveys or other record of any kind showing the nature and constitution of the growing stock, it was impossible for Divisional Forest Officers to select compartments which were to become coupes of the year, and under such circumstances the work of selection fell as a rule on Range Forest Officers, the very men whose prospects depended on the so-called activity they displayed. It is not to be wondered at that they naturally followed in the footsteps of the contractors, and the material continued to be extracted from the most conveniently located compartments as before. Moreover, in Sukkur and Naushahro Divisions principally, they even went a step further. Under the old system, the contractors were compelled to restrict their fellings within certain areas, and when they transgressed the limits the subordinates were prompt in reporting them to their superior officers. But under the "Departmental" system the case was quite different: the woodcutters had only to strike work or refuse to cut in the selected compartments to get more favourably situated ones, because both the Divisional Forest Officers and Range Forest Officers dared not tamper with these men, for if they ran away the Department would not be able to meet its engagements.

82. It is a well known fact that without making large advances it is impossible to get any kind of work done in Sind. The contractors, it was forgotten in condemning the contract system, laid out large sums of money to perform the work satisfactorily. It became necessary, therefore, for the Department to do likewise, as, without a considerable outlay, the executive Forest Officers would not be able to carry out the felling operations of the year. From Rs. 2,000 to Rs. 7,000 had to be advanced at a time to subordinates who had furnished security for Rs. 1,000 only, and whose pay varied from Rs. 20 to Rs. 80. In introducing the new system, it is evident that very little was made of the advance question and great reliance was also placed on the honesty of the men who were to handle such large sums of money. But after it had been working for a year, it was found that Rs. 30,000 were outstanding in one Division alone with hardly any prospect of recovering a greater portion of the amount.

83. In the meantime Act XIII of 1859 (an Act to provide for the punishment of breaches by artificers, workmen and labourers in certain cases) having been applied to Sind, a portion of the debts was recovered under this Act with the greatest difficulty. By giving so much freedom of action and with the help of orders issued to them, I regret to say in contravention of the Forest Department Code, the subordinates considered themselves contractors pure and simple, and when they were able to get the work done at a cheaper

rate in any particular forest they considered themselves justified in spending the savings in another in which they could not carry out the work at the sanctioned rate without accounting for it openly in their books.

84. Under the old system, a considerable amount of friction used always to exist between the contractors and the subordinate officials of the Railway, such as Fuel Inspectors who had the power of rejecting undersized or oversized wood, or that which was of inferior quality. Very often this caused lengthy and acrimonious correspondence between the controlling officers of the two Departments, and as it was considered that the friction was likely to increase under the "Departmental" system, a European contractor, who was styled Superintendent of Fuel Supply, was employed to receive stock and hand over the fuel to the Railway at different stations. It is true that hardly any disputes arose during the term of his contract with the Railway, but litigation of a very serious character originated in another direction in which the Divisional Forest Officers were the sole arbitrators. Having to deal with a large body of men, there were bound to be disagreements, and enquiries after enquiries, however trivial, had to be held to settle the differences between the subordinates and the work-people. The powers with which the Superintendent of Fuel Supply was invested also seem incredible, as it was practically in his hands to ruin a subordinate by simply rejecting a large consignment on insufficient grounds or "packing" the woods of another. The consequence was that they had to find ways and means to work harmoniously with the Fuel Supply establishment.

85. It will be gathered from the above remarks that, while material continued to be extracted much in the same way under both the systems, the monetary risk and utter demoralization of the subordinate service involved under the new one were simply scandalous. The magnitude of the former will be made clearer by the figures shown in the following statement :—

| Division. | Advances outstanding on 1st October 1894. | Disbursements made during the fuel year, 1894-95 (October 1894 to September 1895). | Total of columns II and III. | Recoveries made during the year. | Balance of outstandings on 30th September 1895. |
|---|---|---|---|---|---|
| | Rs. | Rs. | Rs. | Rs. | Rs. |
| Sukkur ... ... | 23,790 | 27,443 | 51,233 | 40,927 | 10,306 |
| Naushahro ... ... | 14,183 | 37,551 | 51,734 | 45,169 | 6,565 |
| Hyderabad ... ... | 23,373 | 53,268 | 76,641 | 66,172 | 10,469 |
| Jerruck ... ... | 25,801 | 29,396 | 55,197 | 37,414 | 17,783 |
| Total ... | 87,147 | 1,47,658 | 2,34,805 | 1,89,682 | 45,123 |

86. I am not yet prepared to say how much of the outstanding advances will be irrecoverable, as, owing to certain recent decisions of the Sadar Court, reversing the orders passed by Magistrates under Act XIII of 1859 (an Act to provide for the punishment of breaches of contract by artificers, workmen and labourers in certain cases,) some of the claims will have to be dragged into a Civil Court before they are settled. The other advantage and the chief one I believe—that of economy in working—is not, therefore, apparent. The bad debts arising from the irrecoverable advances as well as expenditure which yielded no return, such as that of the wood either swept away or embedded in silt or that which was lost from eroding banks, will more than counterbalance the anticipated saving of Rs. 17,000 annually in the working changes.

87. As to the evil effects on the Protective Staff of such a lax system of working, under which the subordinates were not called upon to account in their books for every pie of the funds placed at their disposal, it is evident that not a single man amongst them failed to misappropriate a part of the money passing through his hands. Another indirect result of the new system was the impracticability of transferring subordinates as often as the exigencies of the

service required. The advance accounts having been allowed to run up during the incumbency of one Range Forest Officer, it was found difficult for another to collect his predecessor's outstandings, and consequently the Divisional Forest Officers had, much beyond their will, to keep a man in one place however untrustworthy or incompetent he might be.

88. Such was the state of things I found on taking over charge of the Sind Circle on 29th October 1894, and as the evils of the "Departmental" system were brought to my notice one by one, I took the necessary steps to remedy them.

89. In the Sukkur Division, the extraction and delivery of the fuel from specified compartments to the North-Western Railway and other public bodies were effected through the agency of contractors, but in the two central divisions, Hyderabad and Naushahro, the forests continued to be worked on the "Departmental" system for the simple reason that I was not able to find contractors to undertake the felling as well as delivering operations so late in the season. But the unlimited powers of making advances to Range Forest Officers were, it need not be said, largely restricted, as well as all existing orders that were in contravention of the Forest Department Code cancelled. In the working of the forests of the Jerruck Division, important modifications were carried out just before my arrival which it was not deemed necessary to disturb. As a rule, departmental agency only was employed for felling timber and firewood as well as for manufacturing charcoal, and the transport and subsequent delivery to most of the public departments or to the timber markets were left to contractors to carry out who bore all the expenses in connection therewith. The object of this arrangement was twofold. Firstly, only a portion of the working charges were debited against the Department, and thereby reduced the percentage of expenditure over receipts; and secondly, the material having been sold and made over to the contractors in the forests, there was no further risk.

*(f) Exploitation of Minor Forest Produce.*

*(1) Extraction of Fodder.*

Extraction of fodder.

90. The extraction of fodder is quite an insignificant feature in the working of the forests of the Sind Circle. Villagers are generally allowed to remove grass from the open forests free of charge when they require it for stall feeding their animals.

*(2) Grazing.*

Grazing.

91. In all open forests, grazing is allowed on payment of fees, which are collected by Forest subordinates. The scale of fees laid down under the authority of Government Resolution No. 7277 of 13th October 1886, and which is now strictly enforced, is as under :—

| Kind of Animal. | Per month. | | |
|---|---|---|---|
| | Maximum scale or 1st class fee. | 2nd class fee. | Minimum scale or 3rd class fee. |
| | Rs. a. p. | Rs. a. p. | Rs. a. p. |
| Camel ... ... ... | 0 4 0 | 0 4 0 | 0 4 0 |
| Buffalo ... ... ... | 0 3 0 | 0 1 6 | 0 1 0 |
| Horse ... ... ... | 0 1 6 | 0 0 9 | 0 0 3 |
| Cow or bullock ... ... ... | 0 1 6 | 0 0 9 | 0 0 3 |
| Donkey ... ... ... ... | 0 1 0 | 0 0 6 | 0 0 3 |
| Goat ... ... ... ... | 0 0 3 | 0 0 3 | 0 0 3 |
| Sheep ... ... ... ... | 0 0 3 | 0 0 2 | 0 0 1 |

92. Pasture was fairly abundant within as well as outside forest limits during the year owing to an abnormally high flood having traversed the flat country and heavy rainfall having fallen in the hills. The banking up of the river by the erection of "protective bunds," it was noticed, had completely destroyed the grass and other surface growth in a few forests.

Number of animals that grazed at full and privileged rates.

93. A comparison is made in the following statement of the number of animals licensed for grazing at full and privileged rates during the years 1893-94 and 1894-95 :—

| Division. | No. of Animals. | | Amount of fees collected. | |
|---|---|---|---|---|
| | 1893-94. | 1894-95. | 1893-94. | 1894-95. |
| | | | Rs. | Rs. |
| Sukkur ... ... .. ... | 169,119 | 192,698 | 15,682 | 17,963 |
| Naushahro ... ... ... .. | 122,360 | 104,937 | 8,867 | 8,354 |
| Hyderabad ... ... ... ... | 141,369 | 105,049 | 12,194 | 10,889 |
| Jerruck ... ... ... ... | 93,663 | 81,718 | 11,599 | 11,375 |
| Total ... | 526,511 | 484,402 | 48,342 | 48,581 |

94. It is an undeniable fact that, owing to collusion with forest subordinates, professional as well as non-professional graziers register about half the number of the animals they possess, and the loss to forest revenues resulting from this form of corruption is therefore considerable. Now that departmental agency for the extraction of timber and firewood is no more to be resorted to, both the controlling and executive staff will be able to exercise better supervision over their subordinates, and it would not be a matter of surprise if the revenue from this source rose 30 per cent. at least in the near future.

*(3) Miscellaneous Produce.*

Removal of minor products.

95. The principal articles of minor produce in the forests of the Sind Circle are palrás (pods of the *Acacia Arabica*) and lac, which is obtained from incrustations on babul and kundee branches produced by the insect *Coccus Lacca*, which punctures the bark. The right to collect these as well as other less important minor products is sold annually by auction. Honey, wax, gum and "ber" fruit, kinra, &c., are allowed to be taken free of charge.

## CHAPTER III.

### Gross Yield and Outturn of Forest Produce.

### *I.—Departmental Operations.*

*(a) Timber.*

Outturn of timber.

96. The figures in the following statement show the outturn of large and small timber resulting from departmental operations undertaken during the two years 1893-94 and 1894-95 :—

| Year. | Timber in rough. | | Sawn timber. | | | |
|---|---|---|---|---|---|---|
| | Logs. | Poles. | Planks. | Bolsters. | Sleepers. | Slabs. |
| | No. | No. | No. | No. | No. | No. |
| 1893-94 ... ... ... | 12,850 | 161,905 | 1 | 731 | 9,554 | 1,501 |
| 1894-95 ... ... ... | 13,195 | 172,662 | 8,261 | 27 | 2,120 | 81 |
| Increase ... | 345 | 10,757 | 8,260 | ... | ... | ... |
| Decrease ... | ... | ... | ... | 704 | 7,434 | 1,420 |